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EXAMINER				
MCCRACKEN, DANIEL				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/576,353

Applicant(s)

FRIEDRICH ET AL.

Examiner

DANIEL C. MCCracken

Art Unit

1793

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10-21 and 23-29 is/are pending in the application.
- 4a) Of the above claim(s) 25-27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-21, 23, 24, 28 and 29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB06)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Citation to the Specification will be in the following format: (S. # : ¶/L) where # denotes the page number and ¶/L denotes the paragraph number or line number. Citation to patent literature will be in the form (Inventor # : LL) where # is the column number and LL is the line number. Citation to the pre-grant publication literature will be in the following format (Inventor # : ¶) where # denotes the page number and ¶ denotes the paragraph number.

Status of Application

The response dated 6/21/2010 (mailed 6/17/2010) has been received and will be entered. Claims 1-8, 10-14, 15-21, and 23-29 are pending. Claims 1, 13, 20-21, 25 and 28 are currently amended. Claims 9, 14, and 22 are acknowledged as cancelled.

Response to Arguments

Claim Rejections – 35 U.S.C. §101

I. With respect to the rejection of Claims 25-29 under 35 U.S.C. 101, the traversal is on the grounds that the amendments moot the rejection. (Remarks of 6/21/2010). This is true for Claims 25 and 28, but not for Claims 26-27 and 29 which still contain the “use” language. The rejection of those claims is MAINTAINED, as updated *infra*.

Claim Rejections – 35 U.S.C. §112

I. With respect to the rejection of Claims 5, 21-22, and 25-29 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the

subject matter which applicant regards as the invention, the traversal is on several grounds. With respect to Claim 5, the remarks state “the term ‘normal pressure’ is well-known and commonly used by those of ordinary skill in the art. ‘Normal pressure’ is standard pressure, which is 1.01325 bar or 101.325 Pa.” (Remarks of 6/21/2010 at 9). This is unsubstantiated attorney argument and is not persuasive. (*i.e.* where did 1.01325 bar come from? Or 1.01325 bar according to who?) “Normal pressure” at sea level is different than “normal pressure” on the ocean floor. It is a relative/subjective term. The rejection is MAINTAINED. As to the rejection of Claim 21, the remarks rely on the amendments. *Id.* This is persuasive. The rejection of Claim 21 is WITHDRAWN. The remarks traverse the rejection of Claim 22, but this claim is cancelled. *Id.* The rejection is mooted by cancellation and WITHDRAWN. To the extent the remarks are intended to apply to Claim 20, the remarks are a general allegation of patentability and not persuasive. The passage in the specification called out in the remarks does not illuminate the comparison being drawn. The rejection is applied to Claim 20 *mutatis mutandis*. As to the rejection of Claims 25-29, removal of the “use” language from Claims 25 and 28 obviate the rejections of those claims *on those grounds*, but the same language is present in Claims 26-27 and 29. The remarks do not address the “product-by-apparatus” ambiguities. The rejection is MAINTAINED.

Claim Rejections – 35 U.S.C. §102

I. With respect to the rejection of Claims 1-2, 5-6, 8-12 and 20 under 35 U.S.C. 102(b) as being anticipated by Takada, et al., *Surface Modification and Characterization of Carbon Black With Oxygen Plasma*, Carbon 1996; 34(9): 1087-1091, the traversal is on the grounds that

Takada doesn't teach the oxygen content of Claim 1, as amended. Claim 1 incorporates the limitations of now cancelled Claim 9, which was rejected. The arguments do not address the discussion in the office action related to Claim 9. On reconsideration however, the rejection of Claims 1 (and dependent claims) is WITHDRAWN as Takada does not teach the requisite showing under the anticipation standard.

Claim 20 was also rejected. This rejection was not traversed, nor do the remarks explain how the new language in the claim distinguishes from the reference of record, as required by 37 C.F.R. 1.111(b). The rejection of this claim is MAINTAINED, updated to address amendments.

II. With respect to the rejection of Claims 13-18 under 35 U.S.C. 102(b) as being anticipated by US 4,673,589 to Standley, the traversal is on the grounds that "Claim 13 has been amended in this paper to include the features of canceled claim 14 and to depend from claim 1." (Remarks of 6/21/2010 at 11). This statement is incorrect, as it does not reflect the amendments made to Claim 13. The amendment in fact broadens the language by taking the explicit process steps from Claim 1 and substituting it with "means-plus-function" language. This raises a host of issues discussed *infra*. Because this effectively creates a new embodiment, the rejection is WITHDRAWN, but updated *infra*.

III. With respect to the rejection of Claims 1-4 under 35 U.S.C. 102(b) as being anticipated by US 2003/0082094 to Loufty, et al., the traversal is on the grounds that "Loufty does not teach or suggest that the plasma gas used has a specific oxygen content, let alone the specific oxygen content recited in claim 1." This is persuasive. The rejection is WITHDRAWN in light of the amendment.

Claim Rejections – 35 U.S.C. §103

I. With respect to the rejection of Claims 20-24 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Takada, et al., *Surface Modification and Characterization of Carbon Black With Oxygen Plasma*, Carbon 1996; 34(9): 1087-1091, the traversal is on the grounds that “Claim 22 has been amended to included the features of canceled claim 20.” (Remarks of 6/21/2010 at 11). No it has not. Claim 22 is cancelled and Claim 20 is amended. The Office Action articulated a rationale tending to show inherency. This was not traversed and is presumed correct. The rejection is MAINTAINED, updated to address amendments.

II. With respect to the rejection of Claims 25-29 under 35 U.S.C. 103(a) as being unpatentable over Takada, et al., *Surface Modification and Characterization of Carbon Black With Oxygen Plasma*, Carbon 1996; 34(9): 1087-1091 in view of US 5,028,500 to Fong, et al., the remarks state “Takada and Fong, taken individually or in combination, do not teach or suggest the electrode material of claim 25 or the additive of claim 28, both of which depend from claim 20.” (Remarks of 6/21/2010). No other analysis (to account for amendments, etc.) was provided. *Id.* This is a general allegation of patentability, and is not persuasive. The rejection is WITHDRAWN, updated to account for amendments.

III. Claims 13 and 19 rejected under 35 U.S.C. 102(b) as being anticipated by US 2003/0200742 to Smaling in view of US 5,409,784 to Bromberg, the traversal is on the grounds that “Claim 13, from which claim 19 depends, has been amended herein to depend from claim 1.” This is factually incorrect. Claim 13 does not “depend from” Claim 1. Claim 13 has been

amended to state “wherein the plasmatron has means for conducting the method of claim 1, said plasmatron having.” This is not the same as depending from Claim 1. Claim 1 is a method claim, not an apparatus claim. The rejection is WITHDRAWN but updated to account for the newly created embodiment.

Election/Restrictions

Newly submitted claims 25-27 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The claims are now drawn to some manner of electrode material versus the “method” or improper use claim, as previously presented. These claims lack unity as the special technical features – *i.e.* oxygen plasma treated carbon material – are old and known. *See* Takada., entire document.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 25-27 are withdrawn from consideration as being directed to a non-elected invention. *See* 37 CFR 1.142(b) and MPEP § 821.03.

Claim Objections

I. Claim 1 is objected to because of the following informalities:

Multiple capital letters were employed. This gives the impression of multiple sentences, and claims must be a single sentence. *See* MPEP 608.01(m). Appropriate correction is required.

Claim Rejections - 35 USC § 101

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

I. Claim 29 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101.

Claim 29 does not set forth any steps involved with the use/process. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 112

Background & Discussion

MPEP 2181 discusses claims invoking 35 U.S.C. 112, ¶6 and provides the following three-prong analysis for determining whether 35 U.S.C. 112, ¶6 is invoked. Under the analysis:

- (A) the claim limitations must use the phrase “means for ” or “step for; ”
- (B) the “means for ” or “step for ” must be modified by functional language; and
- (C) the phrase “means for ” or “step for ” must not be modified by sufficient structure, material, or acts for achieving the specified function.

MPEP 2181 I. Here, Claim 13 uses the phrase “means for.” Likewise, the “means for” language in Claim 13 is modified by functional language – i.e. “conducting the method of claim 1.” Finally, Claim 13 does not appear recite any structural elements that would withdraw the claims

from the “112, ¶6” realm, although this is not entirely clear. While a host of structural components are recited (chamber, inductor, etc.), these appear to modify the claimed plasmatron versus the “means for conducting the method of claim 1.” Absent evidence or convincing argument to the contrary, the three-prong test appears satisfied for Claim 13 and dependent Claims 15-19. As such, these claims and limitations are being treated under 35 U.S.C. 112, ¶6. *See* MPEP 2181 I. (“Where a claim limitation meets the 3-prong analysis and is being treated under 35 U.S.C. 112, sixth paragraph, the examiner will include a statement in the Office action that the claim limitation is being treated under 35 U.S.C. 112, sixth paragraph.”). This finding is made once for brevity’s sake, but to the extent it is necessary to support any rejection *infra*, it is expressly incorporated therein by reference.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

I. Claims 13 and 15-19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The analysis for examining

means-plus-function limitations for compliance with 35 U.S.C. 112, first paragraph is set forth in MPEP 2181 IV. MPEP 2181 IV states:

In the situation in which the written description only implicitly or inherently sets forth the structure, materials, or acts corresponding to a means- (or step-) plus-function, and the examiner concludes that one skilled in the art would recognize what structure, materials, or acts perform the function recited in a means- (or step-) plus-function, the examiner should either: (A) have the applicant clarify the record by amending the written description such that it expressly recites what structure, materials, or acts perform the function recited in the claim element; or (B) state on the record what structure, materials, or acts perform the function recited in the means- (or step-) plus-function limitation. **Even if the disclosure implicitly sets forth the structure, materials, or acts corresponding to a means- (or step-) plus-function claim element in compliance with 35 U.S.C. 112, first and second paragraphs, the USPTO may still require the applicant to amend the specification pursuant to 37 CFR 1.75(d) and MPEP § 608.01(o) to explicitly state, with reference to the terms and phrases of the claim element, what structure, materials, or acts perform the function recited in the claim element.**

(emphasis added). The Specification has been reviewed, but does not appear to recite which structure or material perform the functions recited in the claims. While Applicants do employ "means" language in the Specification, this is not in the context of describing the claimed functions (*i.e.* "for conducting the method of claim 1"). *See e.g.* (S. 6: 3) ("means of a gas-phase or liquid-phase oxidation"), (S. 14: 3) ("by means of all other process parameters"), (S. 15: 2) ("means of a mechanical filter"), *and* (S. 16: 3) ("means of a reaction gas"). As such, the claims are rejected as lacking support for the structure, material, or acts corresponding to the functional language employed.

Note the bolded passage from MPEP 2181 IV that suggests this rejection can be obviated by amending the specification to *explicitly* state what structure, materials or acts perform the

function recited in the claim element. To the extent Applicants believe the “means-plus-function” limitation to be *implicitly* supported, citation to the original disclosure with appropriate discussion for support would facilitate entry of such an amendment and avoid unnecessary “new matter” rejections.

I. Claims 1-13, 15-21, 23-24, and 28-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The “high-frequency” language in Claim 1 is a relative term which renders the claim indefinite. The specification discusses a range – *see* (S. 17: 2) - but does not disclose what is high, what is low, etc. Claims 2-8 and Claims 10-12 import these ambiguities.

The “optionally, hydrocarbon components” in Claim 2 and Claim 24 obscures what is required by the claim. When are hydrocarbon components required and when are they not? This information was not revealed by the disclosure.

The term “normal pressure” in Claim 5 is a relative term which renders the claim indefinite. The term “normal pressure” is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

The “in particular from” language in Claim 8 obscures what is required by the claim. This is akin to reciting a range within a range. Here, the “defined partial pressure” is the larger range and the “in particular from 10 to 10,000 Pa” language represents the smaller inclusive range.

With respect to Claims 13 and 15-19, MPEP 2181 II-III addresses the relationship between “means-plus-function” limitations and the “definiteness” requirement of 35 U.S.C. 112,

¶2. “The proper test for meeting the definiteness requirement is that the corresponding structure (or material or acts) of a means (or step)-plus-function limitation must be disclosed in the specification itself in a way that one skilled in the art will understand what structure (or material or acts) will perform the recited function.” MPEP 2181 II. (citations omitted). As elaborated above in the claim rejections under 35 U.S.C. 112, first paragraph, no such disclosure exists. Furthermore, to the extent the structure recited in Claim 13 is in fact the structure corresponding to the function, the language is redundant and obscures what is required by the claim. For example, are two chambers required? Two supply lines? Or an equivalent of a chamber and a chamber, etc.?

With respect to Claim 20, the comparison is not understood, and is akin to a relative term not defined by the Specification. No standard for ascertaining the “unmodified edges” was set forth in the disclosure, and as such, determination of what is “rounded” relative to that is not possible. Can unmodified edges be rounded? How does one ascertain the scope of the claim in that case? Claims 23-24 import the issues now associated with Claim 20.

With respect to Claim 21, the optional “can be” language is indefinite in light of the amendment deleting the apparatus language. The Examiner suggests “normal” product-by-process language such as “[a] carbon material produced by the process/method of claim 1.”

Claim 28 is some unknown manner of product-by-process/product-by-apparatus hybrid claim. The “or with a plasmatron having:” language is the “product-by-apparatus” language. It is not understood what structural or compositional features to impart the *product* in light of the *apparatus* limitations. What if the apparatus sits disconnected from a power supply or gas supply? Again, the Examiner suggests “normal” product-by-process language.

Claim 29 provides for the use of “a carbon material,” but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced. These claims share the same hybrid product-by-process and product-by-apparatus language discussed with respect to Claim 28. Alternatively or additionally, the “use according to” language lacks antecedent basis in light of the most recent amendments.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

I. Claims 1-6, 8, and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2002/0018897 to Kuckertz, et al.

With respect to Claim 1, this claim requires “Generation of a high-frequency field in a chamber of a plasmatron.” Kuckertz teaches generation of a field in a plasmatron. *See* (Kuckertz 2: [0021] *et seq.*). Fields are discussed at paragraph [0022]. Notwithstanding the ambiguities noted above, Kuckertz is interpreted as teaching a “high frequency” field as it can generate a plasma of the gasses disclosed in the specification (oxygen, etc.). Claim 1 further requires “Introduction of a plasma gas into chamber, wherein the oxygen content in the plasma gas amounts from 0.01 to 10 vol %.” Kuckertz teaches introducing the oxidizing gas at 5 vol. %. (Kuckertz 4: [0035]). Oxygen is one of the gases listed as suitable. (Kuckertz 4: [0036]). While Kuckertz doesn’t precisely state “oxygen at 5 vol %” one of skill in the art would read Kuckertz

as reasonably teaching/suggesting oxygen at this concentration in light of these passages, hence application of Kuckertz under §103. Claim 1 further requires “Generation of a plasma with the plasma gas by the high-frequency field.” Generation of the plasma is taught. *See e.g.* (Kuckertz 4: [0040]). Claim 1 further requires “Introduction of initial material into the plasma.” Kuckertz teaches introduction of the material into the plasma. *See e.g.* (Kuckertz 3: [0025]; 4: [0037]). As to Claim 2, both non-graphitic carbon components and carbon components are taught. *See e.g.* (Kuckertz 4: [0037]). As to Claim 3, introduction of the material is taught. (Kuckertz 4: [0039]). As to Claim 4, pressure driven passage of the reactants through the plasma is suggested. (Kuckertz 4: [0039] *et seq.*) As to Claim 5, notwithstanding the ambiguities associated with this claim, Kuckertz teaches an “atmospheric plasma.” (Kuckertz 3: [0023]). This is being interpreted as “normal.” As to Claim 6, the particular arrangement of process equipment appears to be reasonably suggested. (Kuckertz 3: [0023] *et seq.*) To the extent it is not, modification is well within skill in the art to alter the discharge in the desired direction, in accordance with the teachings at paragraph [0023] *et seq.* As to Claim 8, the percentages at (Kuckertz 4: [0035]) in light of the “atmospheric plasma” at (Kuckertz 3: [0023]) suggest the partial pressures. To the extent they do not, the concentration of the oxidant is shown to affect the various features of the final product. *See* (Kuckertz “Table 1”). Stated differently, oxygen content/concentration/partial pressures is a result effective variable, the optimization of which does not impart patentability. *See* MPEP 2144.05. As to Claim 10, inerts are taught. (Kuckertz 4: [0039]). As to Claim 11, reaction gasses are introduced. (Kuckertz 4: [0036]-[0039]). As to Claim 12, note the discussion of frequencies at (Kuckertz 1: [0003]). To the extent Kuckertz *may* not teach the range as

claimed, modifying the frequency is well within the skill in the art to affect the charging of the materials discussed at (Kuckertz 1: [0004]). *See* MPEP 2144.05.

II. Claims 20-21 and 23-24 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Takada, et al., *Surface Modification and Characterization of Carbon Black With Oxygen Plasma*, Carbon 1996; 34(9): 1087-1091.

With respect to Claim 20, notwithstanding the ambiguities associated with this claim, Takada teaches carbon black modified with a plasma and oxygen. (Takada at 1087, col. 2 *et seq.*). This is all the claim requires. As to Claim 23, this claim recites properties only verifiable by performing special laboratory tests not at the disposal of the Office. Given the similarity in the processes (*i.e.* oxygen plasma), and notwithstanding the ambiguities noted above, it is expected that the properties are necessarily taught. Likewise, with respect to Claim 24, it is expected that the carbon black of Takada has the graphitic components and/or amorphous (*i.e.* non-graphitic) carbon components. (Takada at 1087, col. 1). “[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on inherency’ under 35 U.S.C. 102, on prima facie obviousness’ under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted].” The burden of proof is similar to that required with respect to product-by-process claims. *In re Fitzgerald*, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)).

With respect to Claim 21, this claim is being treated as a product-by-process claim. All that is reasonably suggested by the process steps is a carbon material with an oxygen group

imparted by the plasma treatment. This is taught by Takada. *See e.g.* (Takada at 1090, col. 2) (discussing functional groups).

III. Claims 13 and 15-18 rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,673,589 to Standley.

With respect to Claim 13, and notwithstanding the ambiguities noted above, Standley teaches a plasmatron/chamber with an inductor (24) various gas supply lines (*e.g.* line 10) and material supply lines (*e.g.* line 15). *See generally* (Standley 5: 49 *et seq.*, "Fig. 1"). These appear to be the structural components disclosed that give rise to the method/function of Claim 1. To the extent this claim is to somehow require duplicate parts, duplication of parts does not impart patentability. *See* MPEP 2144.04 VI. B. As to Claim 15, the gas is supplied to the edge of the plasma. *See* (Standley "Fig. 1") (distribution manifold 22). As to Claim 16, the gas lines or the access door (Standley 5: 55) can be characterized as powder introduction devices. As to Claim 17, power supplies are taught. (Standley 6: 9). As to Claim 18, gas supply lines are taught. (Standley 5: 60 *et seq.*).

IV. Claims 1, 7, 13 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0200742 to Smaling in view of US 5,409,784 to Bromberg.

With respect to Claim 1, and notwithstanding the ambiguities noted above, Smaling teaches introducing a hydrocarbon fuel and air into a plasmatron. *See e.g.* (Smaling "Fig. 2"). Smaling teaches that any number of plasmatrons can be used with the process of Smaling, including US 5,409,784 to Bromberg, which reasonably suggests a "high-frequency" field. *See e.g.* (Bromberg "Fig 4," 3: 57-58). Smaling teaches a number of oxidation reactions, which

oxidize a stream of gases to *inter alia* water. (Smaling 1: [0016]) *et seq.* Balancing the requisite stoichiometry to arrive at the oxygen content claimed is well within the skill in the art to remove the quantity of NO_x/CO/hydrocarbons, etc. being treated. *See* MPEP 2144.05. As to Claim 7, a filter and filtering step are taught. (Smaling “Fig. 4 - ‘76”).

With respect to Claim 13 Smaling teaches a plasmatron/chamber with various lines for introducing the material and plasma gas. *See e.g.* (Smaling “Fig. 4”). Note that Smaling incorporates several plasmatron patents by reference that can be employed with the apparatus of Smaling. (Smaling 2: [0023]). One of these is US 5,409,784 to Bromberg, et al. Bromberg teaches plasmatrons with more detail, including induction coils. *See e.g.* (Bromberg “Fig. 4”). This appears to be the structure disclosed in the specification (*e.g.* “Fig. 1”) that would perform the function of Claim 1, as now required by Claim 13. To the extent Claim 13 requires duplication of parts, this does not impart patentability. *See* MPEP 2144.04 VI. B. As to Claim 19, Smaling teaches a filter and filtering step. (Smaling “Fig. 4 - ‘76”).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL C. MCCracken whose telephone number is (571)272-6537. The examiner can normally be reached on Monday through Friday, 9 AM - 6 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley S. Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1793

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Daniel C. McCracken/
Daniel C. McCracken
Examiner, Art Unit 1793
DCM